

Presenter: Jonathan Segal

✉ jis62@cornell.edu

i Background:

To broaden the accessibility of social virtual reality beyond replacing one sensory modality with another, we identified a subset of social cues and built tools to enhance them allowing users to switch between modalities to choose how these cues are represented

🧰 Toolkit Design:

Accessible social cues are vital in complex social environments. Based on previous work, we selected four social cues:

1. Active speaker Detection
2. Gaze direction Detection
3. Gesture Detection
4. Proximity Detection

These cues were relevant to both BLV and DHH users, and developed multiple methods of rendering these social signals

</> Tools Developed:

1. **Detection of the Active Speaker.**
Understanding who is currently speaking is important during an interaction.
2. **Gaze Direction Detection.**
Eye contact is an important social cue, indicating focus, attentiveness, and interest, among other things.
3. **Non-Verbal Gesture Detection:**
Understanding social cues such as head nodding can be a hurdle for BLV people, especially in VR, and these can also be missed by DHH people who are simultaneously monitoring closed captions or other information visually.
4. **Proximity Detection:**
Those who struggle to perceive proximity, or the relative distance between themselves and others, are missing important nonverbal information

SocialCueSwitch

Towards Customizable Accessibility
by Representing Social Cues
in Multiple Senses

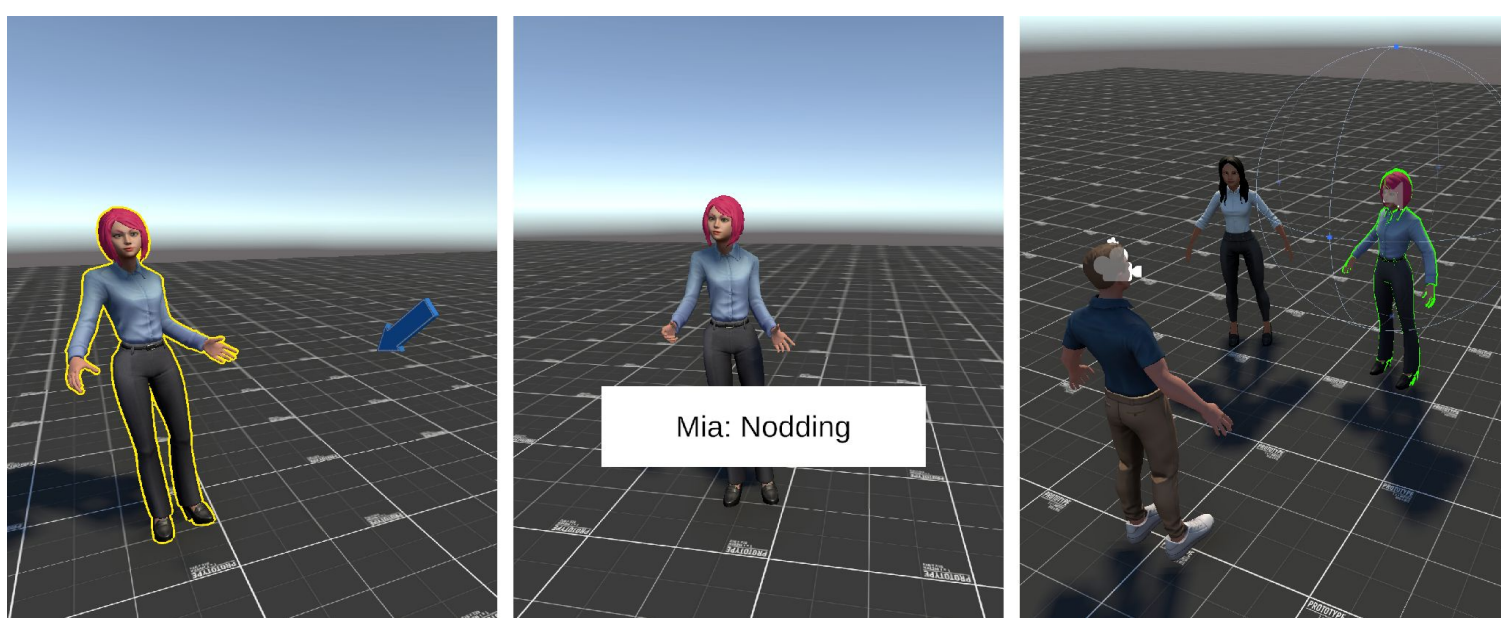


What if we conceptualized VR accessibility using **Sensory Substitution?**

And **distributed** a toolkit
using a **package
manager**



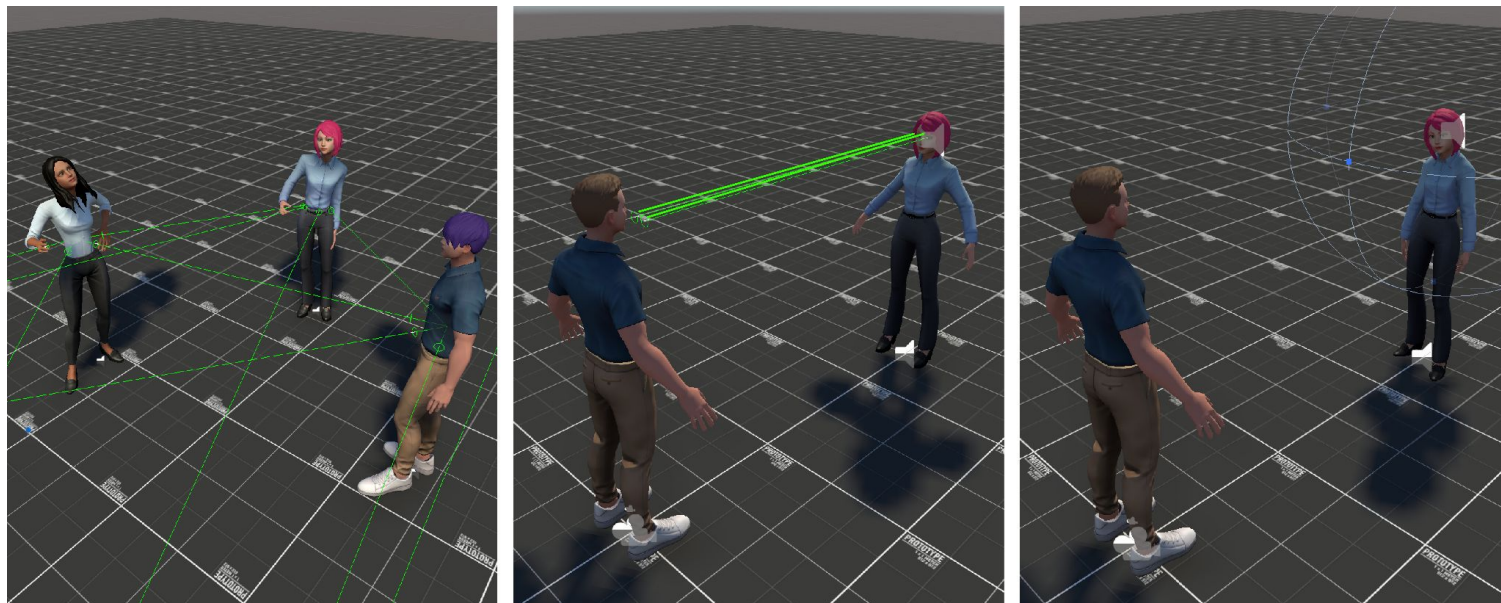
Scan to view the
full paper



” Discussion:

We introduced a set of tools developed in Unity that enhance accessibility in VR for users with visual and auditory impairments, but can be flexibly extended to accommodate individual users’ needs and preferences.

These tools capture proximity, eye contact, active speaker status and head nodding in social virtual reality, and render these social cues using other sensory modalities, creating a more inclusive and customizable VR experience.



Standardizing and Enhancing the Reach of Accessibility Toolsets

There have been numerous accessible VR tools developed. These tools are shared in a fragmented and unstandardized way, limiting their reach and use by the broader community. Package management tools are a potential pathway for increasing exposure of VR tools. A universal social VR system could make virtual social interactions more accessible, immersive, and engaging, marking a leap forward in the accessibility of social VR.

👤 Authors

Jonathan Segal, Samuel Rodriguez, Akshaya Raghavan, Heysil Baez, Crescentia Jung, Jazmin Collins, Shiri Azenkot, Andrea Stevenson Won

Enhancing
Ability Lab
Cornell Tech

